

Claims

WHAT IS CLAIMED IS:

1. A method to warp a pixel, comprising:
receiving a pixel coordinate pair having an intensity value, an x-pixel coordinate, and a y-pixel coordinate;
identifying a pixel weight, the pixel weight including a product of an x-pixel weight and a y-pixel weight; and
using the product and the intensity value to warp the pixel coordinate pair to one or more target pixel coordinate pairs.
2. The method of claim 1 further comprising using a warping function when identifying the pixel weight.
3. The method of claim 1 further successively repeating each step until remaining pixel coordinate pairs are warped to remaining target pixel coordinate pairs.
4. The method of claim 1 wherein in using the product to warp the pixel coordinate pair, one or more of the target pixel coordinate pairs represent a target pixel lattice.
5. The method of claim 1 wherein in using the product to warp the pixel coordinate pair, one or more of the target pixel coordinate pairs represent a stretched pixel coordinate pair.
6. The method of claim 1 wherein in using the product to warp the pixel coordinate pair, one or more of the target pixel coordinate pairs represent at least one of a compressed pixel coordinate pair, a translated pixel coordinate pair, and a rotated pixel coordinate pair.

7. The method of claim 1, wherein in identifying the pixel weight, the pixel weight is represented as a fixed point number or floating point number.
8. A method to warp an image, comprising:
acquiring a plurality of input pixels associated with a source image;
passing each of the input pixels to a warping set of executable instructions and receiving a separate scale for each of the passed input pixels;
weighting each of the input pixels based on the separate scales; and
mapping each of the input pixels to an output lattice using the separate scales.
9. The method of claim 8 further comprising producing a destination image from the mapping.
10. The method of claim 9 wherein the produced destination image represents at least one of a stretched source image, a rotated source image, and a compressed source image.
11. The method of claim 8 further comprising, associating a separate intensity value with each of the input pixels.
12. The method of claim 11 further comprising, assigning a horizontal scale and a vertical scale with each separate scale.
13. The method of claim 12, wherein the associated intensity value is fixed point.
14. The method of claim 12, wherein the associated intensity value is floating point.
15. The method of claim 8, wherein the steps are performed by a processing set

of executable instructions residing on a computer readable medium with a single operational pass of the input pixels.

16. The method of claim 8, further comprising displaying the output lattice on a display.

17. A method to generate a two-dimensional pixel weight, comprising:
acquiring a warped pixel;
acquiring a source pixel; and
generating a single two-dimensional pixel weight from the warped pixel and the source pixel, thereby permitting a second source pixel to be transformed into a second warped pixel using the single two-dimensional pixel weight.

18. A warped image residing in a computer readable medium, comprising:
one or more pixel lattices produced from a single-pass set of executable instructions, wherein each pixel lattice is generated from one or more source pixels and each source pixel associated with a weight representing a two-dimensional warping scale of each of the source pixels as represented in each pixel lattice.

19. The warped image of claim 18, wherein the single-pass set of executable instructions includes a call to a warping function operable to assist in producing each dimensional warping scale used in the weight.

20. The warped image of claim 19, wherein the warping function is linear.

21. The warped image of claim 19, wherein the warping function is non-linear.

22. The warped image of claim 19, wherein the warped image is embodied within a video stream.

23. A system to warp a source image, comprising:
a plurality of input pixels, each input pixel having an intensity value and each input pixel associated with a source image;
a warping set of executable instructions operable to process the input pixels producing scaling data; and
a plurality of destination lattices representing warped versions of the input pixels and produced by using the scaling data to assist in generating a single two-dimensional weight for each input pixel, which when combined with each input pixel's intensity value form each of the destination lattices.
24. The system of claim 23, wherein the plurality of destination lattices form a single destination image representing a warped version of the source image.
25. The system of claim 24, wherein destination images represents at least one of a stretched version of the source image, a compressed version of the source image, and a scaled version of the source image.
26. The system of claim 23, wherein the two-dimensional weight includes a horizontal weight and a vertical weight.
27. The system of claim 23, wherein the plurality of destination lattices are formed dynamically from the plurality of input pixels.
28. The system of claim 27, wherein the input pixels are processed in a single pass by a processing set of executable instructions to form the plurality of destination lattices.
29. The system of claim 23, wherein the warping set of executable instructions is non-separable for a first dimension and a second dimension associated with the single two-dimensional weight.

30. The system of claim 23, wherein the destination lattices do not require additional filtering on destination pixels associated with each of the destination lattices.
31. The system of claim 23, wherein the system is used in connection with a video device or a security surveillance device.
32. A system to warp an image, comprising:
 - a computing device;
 - a display device;
 - a memory;
 - a source image residing in the memory having a plurality of input pixels, each input pixel including an intensity value and each input pixel associated with the source image;
 - a warping set of executable instructions operable to execute on one or more processing elements within the computing device to process the input pixels producing scaling data; and
 - a plurality of destination lattices displayed on the display device and representing warped versions of the input pixels and produced by using the scaling data to assist in generating a single two-dimensional weight for each input pixel, which when combined with each input pixel's intensity value form each of the destination lattices.
33. The system of claim 32, wherein the display device is at least one of a printer, a monitor, a television, a video camera, and a camera.
34. The system of claim 32, wherein the memory is at least one of a volatile storage and a non-volatile storage.

35. The system of claim 32, wherein the warping set of executable instructions is separable or non separable.

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